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Publication date:
2012

Document Version
Publisher's PDF, also known as Version of record

Abstract for POSTER presentation, 7th International Conference on the Environmental Effects of Nanoparticles and Nanomaterials

Uptake and depuration of three differently functionalized zinc oxide nanoparticles to *Daphnia magna*

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Abstract:

During the last couple of years the use of nanoparticles (NP) has dramatically increased. Zinc oxide nanoparticles (ZnO NP) have a wide range of applications e.g. in personal care products, paints and semi conductors. However, few studies have so far investigated the ecotoxicity of ZnO NP and to our knowledge the bioaccumulation behavior in regards to difference in functionalization of ZnO NP has not been studied previously. In this study, experiments with the crustacean *Daphnia magna* was carried out to test if the changes in lipophilicity of functionalized ZnO NP would respectively increase or decrease the bioaccumulation compared to ZnO NP. The experiments were based on ISO 6341 Daphnia immobilization test and bioaccumulation studies with *Daphnia magna* including a 24h uptake and 24h depuration phase. The tested ZnO NP was of same primary size (35 nm) but with different functionalizations (ZnO, ZnO-OH, ZnO-C_8H_{17}). Characterization included ICP-MS, DLS, BET and TEM. Preliminary results show a fast uptake of ZnO NP (k_1=0.11 h^{-1}) and fast depuration (k_2=-0.23). In contrast, ZnO-OH did not show significant uptake compared to control. The poster will focus on trends in uptake and depuration of NP with changes of functionalization in terms of lipophilicity compared to non-functionalized ZnO.